

Application: 09/874,074 Examiner: Holmes

GAU: 2121

From: T. McGill

Location: IDC FMF FDC

Date: 2-9-05

[XRUSH] Response:

Claim 1: canceled

Claim 2: = Claim 2 The system according to claim 1 ...

Claim 3: = Claim 1

Claim 4: = Claim 3 The system according to claim 1 ...

Claim 5: = Claim 4 The system according to claim 1 ...

Claim 6: = Claim 5

Claim 7: canceled

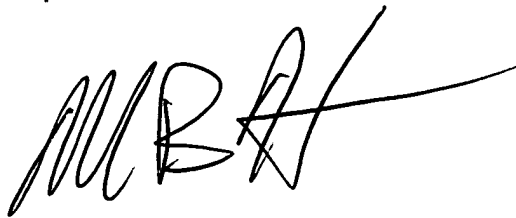
Claim 8: = Claim 7 The method according to claim 6 ...

Claim 9: = Claim 6

Claim 10: = Claim 8 The method according to claim 6 ...

Claim 11: = Claim 9

Claim 12: = Claim 10

  
2/26/05

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the above-identified application:

Claim 1 (cancelled).

CLAIM 2 → Claim 2 (currently amended): The system according to Claim <sup>1</sup>[[1]]~~2~~, wherein the Analytical and Machine Learning tools use a machine learning technique appropriate for the data source to extract information, with the technique being symbolic, empirical, or hybrid, domain-dependent or domain-independent, and run in supervised or unsupervised modes.

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CLAIM 1 → Claim 3 (currently amended): The system according to Claim 1, An Adaptive Knowledge Management System for assisting a user with decision making by providing real-time, on-line automated recommendations for actions in a monitored vehicle troubleshooting, performance trend monitoring, health management and preemptive maintenance domain diagnostics and prognostics, comprising:

a Structured Knowledge Repository constructed from models, historical data, and heuristics for organizing a model domain knowledge, wherein the Structured Knowledge Repository represents the model domain knowledge in Abstraction-Decomposition Space format, and using constraints, capabilities, relationships as prioritized means-ends rows, and physical organization as prioritized whole-part columns;

a plurality of Analytical and Machine Learning tools capturing knowledge from data sources and populating cells of the Structured Knowledge Repository;

a Mixed-Initiative Planning module interpreting operation goals for the monitored vehicle and utilizing the Structure Knowledge Repository for developing recommendations for user decision making; and

a plurality of Mixed-initiative Decision Support tools using a feedback from the Mixed-Initiative Planning module and querying the Structured Knowledge Repository for incorporating the extracted knowledge and information into outputs dealing with current issues and contingencies.

CLAIM 3 → <sup>1</sup> Claim 4 (original): The system according to Claim ~~3~~<sup>1</sup>, wherein the means-ends rows have goals at the highest abstraction level, then abstract functions that typically contains first-principles equations, general functions with information about the generalized engineering, physical functions with information about the specific engineered subsystems and components, and physical forms with module physical characteristics, and the whole-part columns having system at the highest aggregation level, then units, and components.

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CLAIM 4 → Claim 5 (currently amended): The system according to Claim ~~[[1]]~~ 2, wherein the Mixed-Initiative Planning module further includes creating predictions of behavior models through correlation and pattern recognition, and developing a prioritization scheme using artificial intelligence rules prioritization techniques.

CLAIM 5 → Claim 6 (currently amended): ~~The system according to Claim 1,~~ An Adaptive Knowledge Management System for assisting a user with decision making by providing real-time, on-line automated recommendations for actions in a monitored vehicle troubleshooting, performance trend monitoring, health management and preemptive maintenance domain diagnostics and prognostics, comprising:  
    a Structured Knowledge Repository constructed from models, historical data, and heuristics for organizing a model domain knowledge;  
    a plurality of Analytical and Machine Learning tools capturing knowledge from data sources and populating cells of the Structured Knowledge Repository;  
    a Mixed-Initiative Planning module interpreting operation goals for the monitored vehicle and utilizing the Structure Knowledge Repository for developing recommendations for user decision making; and  
    a plurality of Mixed-initiative Decision Support tools using a feedback from the Mixed-Initiative Planning module and querying the Structured Knowledge Repository for incorporating the extracted knowledge and information into outputs dealing with current issues and contingencies, wherein the Mixed-Initiative Decision Support tools create the outputs usable for vehicle design, adjust factory production set points, improve maintenance schedules, improve fleet management, and make predictions.

Claim 7 (cancelled).

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CLAIM 7 →

Claim 8 (currently amended): The method according to Claim ~~[[7]]~~ 2, wherein the step of using the Analytical and Machine Learning tools includes using a machine learning technique appropriate for the data source to extract information, with the technique being symbolic, empirical, or hybrid, domain dependent or domain independent, and run in supervised or unsupervised modes.

CLAIM 6 →

Claim 9 (currently amended): ~~The method according to Claim 7,~~ A method usable in an Adaptive Knowledge Management System for assisting a user with decision making by providing real-time, on-line automated recommendations for actions in a monitored vehicle troubleshooting, performance trend monitoring, health management and preemptive maintenance domain diagnostics and prognostics, comprising the following steps:

(a) constructing a Structured Knowledge Repository from models, historical data, and heuristics for organizing a model domain knowledge, wherein the Structured Knowledge Repository represents the model domain knowledge in Abstraction-Decomposition Space format, and uses constraints, capabilities, relationships as structured means-ends rows, and physical organization as structured whole-part columns;

(b) using a plurality of Analytical and Machine Learning tools for capturing knowledge from data sources and populating cells of the Structured Knowledge Repository;

(c) using a Mixed-Initiative Planning module for interpreting operation goals for the monitored vehicle and utilizing the Structure Knowledge Repository for developing recommendations for user decision making; and

(d) using a plurality of Mixed-initiative Decision Support tools for utilizing a feedback from the Mixed-Initiative Planning module and querying the Structured Knowledge Repository, for incorporating the extracted knowledge and information into outputs dealing with current issues and contingencies.

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CLAIM 8 →

Claim 10 (original): The method according to Claim 9, wherein the means-ends rows have goals at the highest abstraction level, then abstract functions with equations, general functions with information about the general engineering, physical functions with information about the specific engineered subsystems and components, and physical forms with module physical characteristics, and the whole-part columns having system at the highest aggregation level, then units, and components.

CLAIM 9

Claim 11 (currently amended): ~~The method according to Claim 7, A method usable in an Adaptive Knowledge Management System for assisting a user with decision making by providing real-time, on-line automated recommendations for actions in a monitored vehicle troubleshooting, performance trend monitoring, health management and preemptive maintenance domain diagnostics and prognostics, comprising the following steps:~~

~~(a) constructing a Structured Knowledge Repository from models, historical data, and heuristics for organizing a model domain knowledge;~~

~~(b) using a plurality of Analytical and Machine Learning tools for capturing knowledge from data sources and populating cells of the Structured Knowledge Repository;~~

~~(c) using a Mixed-Initiative Planning module for interpreting operation goals for the monitored vehicle and utilizing the Structure Knowledge Repository for developing recommendations for user decision making, wherein the step of using the Mixed-Initiative Planning module further includes creating predictions of behavior models through correlation and pattern recognition, and developing a prioritization scheme to tradeoff competing goals and resource limitations; and~~

~~(d) using a plurality of Mixed-initiative Decision Support tools for utilizing a feedback from the Mixed-Initiative Planning module and querying the Structured Knowledge Repository, for incorporating the extracted knowledge and information into outputs dealing with current issues and contingencies.~~

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CLAIM 10 →

Claim 12 (currently amended): ~~The method according to Claim 7, A method usable in an Adaptive Knowledge Management System for assisting a user with decision making by providing real-time, on-line automated recommendations for actions in a monitored vehicle troubleshooting, performance trend monitoring, health management and preemptive maintenance domain diagnostics and prognostics, comprising the following steps:~~

(a) constructing a Structured Knowledge Repository from models, historical data, and heuristics for organizing a model domain knowledge;

(b) using a plurality of Analytical and Machine Learning tools for capturing knowledge from data sources and populating cells of the Structured Knowledge Repository;

(c) using a Mixed-Initiative Planning module for interpreting operation goals for the monitored vehicle and utilizing the Structure Knowledge Repository for developing recommendations for user decision making; and

(d) using a plurality of Mixed-initiative Decision Support tools for utilizing a feedback from the Mixed-Initiative Planning module and querying the Structured Knowledge Repository, for incorporating the extracted knowledge and information into outputs dealing with current issues and contingencies, wherein the step of using the Mixed-Initiative Decision Support tools includes creating the outputs usable for vehicle design, adjusting factory production set points, improving maintenance schedules, improving fleet management, and making predictions.

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REMARKS

This is a full and timely response to the non-final Office Action mailed May 5, 2004 (Paper No. 3). Reexamination and reconsideration in view of the foregoing amendments and following remarks is respectfully solicited.

Claims 2-6, 8-12 are pending in this application, with Claims 3, 6, 9, 11 and 12 being the independent claims. Claims 2, 3, 5, 6, 8, 9, 11, and 12, have been amended, and Claims 1 and 7 have been canceled. No new matter is believed to have been added.

Claim Objections

In the office action, claims 3-4, 6 and 9-12 were objected to as being dependent upon a rejected base claim, but were stated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, applicants have amended claims 3, 6, 9, 11 and 12, rewriting these claims in independent form including all the limitations of their respective base claim and any intervening claims. Thus, applicants respectfully submit that amended independent claims <sup>1</sup>3, <sup>5</sup>6, <sup>9</sup>9, <sup>11</sup>11 and <sup>12</sup>12 are allowable. Furthermore, as claims <sup>2</sup>2, <sup>3</sup>3 and <sup>4</sup>4 all depend from, and include all the limitations of allowable independent claim 3, they are submitted to be allowable. Furthermore, as claims <sup>7</sup>7 and <sup>8</sup>8 depend from, and include all the limitations of allowable claim 9, they are also submitted to be patentably distinct.

*MBA*

Conclusion

In summary, and in view of the amendments herein, none of the references cited by the Examiner nor any other known prior art, either alone or in combination, disclose the unique combination of features disclosed in applicant's claims presently on file. For this reason, allowance of all of applicant's claims is respectfully solicited.



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The amendments herein added 2 new independent claims. Please charge Ingrassia, Fisher & Lorenz, Deposit Account No. 50-2091 \$172.00 to cover the additional independent claim fee.

If any fees, including extension of time fees or additional claims fees, are due as a result of this response, please charge Ingrassia, Fisher & Lorenz, Deposit Account No. 50-2091. This authorization is intended to act as a constructive petition for an extension of time, should an extension of time be needed as a result of this response. The Examiner is invited to telephone the undersigned if this would in any way advance the prosecution of this case.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

Dated: July 28<sup>th</sup>, 2004

By: 

S. Jared Pitts

Reg. No. 38,579

(480) 385-5060